CLAIMS

1. A method of recombinantly producing a glucoamylase, said method comprising the step of expressing a polynucleotide encoding a polypeptide having glucoamylase activity (E.C. 3.2.1.3) in a filamentous fungal host cell, wherein the polypeptide comprises an amino acid sequence which is at least 70% identical to the sequence shown in positions 19 to 471 (both incl.) of SEQ ID NO: 2.

2. The method according to claim 1, wherein the polypeptide also comprises a starch-binding-domain (SBD).

3. The method according to claim 2, wherein the starch-binding-domain comprises an amino acid sequence which is at least 80% identical to the sequence shown in positions 483 to 579 (both incl.) of SEQ ID NO: 2.

4. The method according to any of claims 1 - 3, wherein the polypeptide comprises an amino acid sequence which is at least 80% identical to the sequence shown in positions 19 to 579 (both incl.) of SEQ ID NO: 2.

5. The method according to any of claims 1 - 4, wherein the polypeptide comprises a linker between the starch-binding domain and the remaining polypeptide of at least 2 amino acids.

6. The method according to any of claims 1 - 5, wherein the polypeptide comprises a signal peptide.

7. The method according to claim 6, wherein the signal peptide comprises an amino acid sequence which is at least 95% identical to the sequence shown in positions 1 to 18 (both incl.) of SEQ ID NO: 2.

8. The method according to any of claims 1 - 7, wherein the polypeptide comprises an amino acid sequence which is at least 70% identical to the sequence shown in SEQ ID NO: 2.

9. The method according to any of claims 1 - 8, wherein the filamentous fungal host cell is of the genus *Aspergillus*.

10. The method according to claim 9, wherein the *Aspergillus* host cell is an *A. awamori, A. oryzae,* or *A. niger* cell.

11. The method according to any of claims 1 - 10, wherein a subsequent step of recovery and/or purification of the glucoamylase is performed.

12. A method for saccharifying liquefied starch, comprising the treatment of the liquefied starch with a polypeptide having glucoamylase activity (E.C. 3.2.1.3), wherein the polypeptide comprises an amino acid sequence which is at least 70% identical to the sequence shown in positions 19 to 471 (both incl.) of SEQ ID NO: 2, whereby a % dextrose (DX) value of at least 96% is achieved at 30% w/w (g/100g dry matter) substrate concentration at 60°C, the DX value is determined as defined in Example 7 herein.

13. The method according to claim 12, wherein the polypeptide also comprises a starch-binding-domain (SBD).

14. The method according to claim 13, wherein the starch-binding-domain comprises an amino acid sequence which is at least 80% identical to the sequence shown in positions 483 to 579 (both incl.) of SEQ ID NO: 2.

15. The method according to any of claims 12 - 14, wherein the polypeptide comprises an amino acid sequence which is at least 80% identical to the sequence shown in positions 19 to 579 (both incl.) of SEQ ID NO: 2.

16. The method according to any of claims 12 - 15, wherein the polypeptide comprises a linker between the starch-binding domain and the remaining polypeptide of at least 2 amino acids.

17. The method according to any of claims 12 - 16, wherein the polypeptide comprises a signal peptide.

18. The method according to claim 17, wherein the signal peptide comprises an amino acid sequence which is at least 95% identical to the sequence shown in positions 1 to 18 (both incl.) of SEQ ID NO: 2.

19. The method according to any of claims 12 - 18, wherein the polypeptide comprises an amino acid sequence which is at least 70% identical to the sequence shown in positions 1 to 579 (both incl.) of SEQ ID NO: 2.

20. A filamentous fungal host cell comprising at least one copy of a polynucleotide encoding a polypeptide having glucoamylase activity (E.C. 3.2.1.3), said polypeptide comprising an amino

acid sequence which is at least 70% identical to the sequence shown in positions 19 to 471 (both incl.) of SEQ ID NO: 2.

21. The host cell of claim 20, wherein the polypeptide also comprises a starch-binding-domain (SBD).

22. The host cell of claim 21, wherein the starch-binding-domain comprises an amino acid sequence which is at least 80% identical to the sequence shown in positions 483 to 579 (both incl.) of SEQ ID NO: 2.

23. The host cell according to any of claims 20 - 22, wherein the polypeptide comprises an amino acid sequence which is at least 80% identical to the sequence shown in positions 19 to 579 (both incl.) of SEQ ID NO: 2.

24. The host cell according to any of claims 20 - 23, wherein the polypeptide comprises a linker between the starch-binding domain and the remaining polypeptide of at least 2 amino acids.

25. The host cell according to any of claims 20 - 24, wherein the polypeptide comprises a signal peptide.

26. The host cell according to claim 25, wherein the signal peptide comprises an amino acid sequence which is at least 95% identical to the sequence shown in positions 1 to 18 (both incl.) of SEQ ID NO: 2.

27. The host cell according to any of claims 20 - 26, wherein the polypeptide comprises an amino acid sequence which is at least 70% identical to the sequence shown in positions 1 to 579 (both incl.) of SEQ ID NO: 2.

28. The host cell according to any of claims 20 – 27 which is of the genus *Aspergillus*.

29. The host cell according to claim 28 which is an *A. awamori, A. oryzae,* or *A. niger* cell.

30. Use of a polypeptide having glucoamylase activity (E.C. 3.2.1.3) in a starch conversion process, wherein the polypeptide comprises an amino acid sequence which is at least 70% identical, to the sequence shown in positions 19 to 471 (both incl.) of SEQ ID NO: 2.

31. Use of a polypeptide having glucoamylase activity (E.C. 3.2.1.3) in a continuous starch conversion process, wherein the polypeptide comprises an amino acid sequence which is at least 70% identical, to the sequence shown in positions 19 to 471 (both incl.) of SEQ ID NO: 2.

32. Use of a polypeptide having glucoamylase activity (E.C. 3.2.1.3) in a process for producing oligosaccharides, wherein the polypeptide comprises an amino acid sequence which is at least 70% identical, to the sequence shown in positions 19 to 471 (both incl.) of SEQ ID NO: 2.

33. Use of a polypeptide having glucoamylase activity (E.C. 3.2.1.3) in a process for producing specialty syrups, wherein the polypeptide comprises an amino acid sequence which is at least 70% identical, to the sequence shown in positions 19 to 471 (both incl.) of SEQ ID NO: 2.

34. Use of a polypeptide having glucoamylase activity (E.C. 3.2.1.3) in a process for producing ethanol for fuel or drinking ethanol (portable alcohol), wherein the polypeptide comprises an amino acid sequence which is at least 70% identical, to the sequence shown in positions 19 to 471 (both incl.) of SEQ ID NO: 2.

35. Use of a polypeptide having glucoamylase activity (E.C. 3.2.1.3) in a process for producing a beverage, wherein the polypeptide comprises an amino acid sequence which is at least 70% identical, to the sequence shown in positions 19 to 471 (both incl.) of SEQ ID NO: 2.

36. Use of a polypeptide having glucoamylase activity (E.C. 3.2.1.3) in a fermentation process for producing organic compounds, such as citric acid, ascorbic acid, lysine, glutamic acid, wherein the polypeptide comprises an amino acid sequence which is at least 70% identical, to the sequence shown in positions 19 to 471 (both incl.) of SEQ ID NO: 2.

37. Use of a polypeptide having glucoamylase activity (E.C. 3.2.1.3) in detergents, wherein the polypeptide comprises an amino acid sequence which is at least 70% identical, to the sequence shown in positions 19 to 471 (both incl.) of SEQ ID NO: 2.

38. Use of a polypeptide having glucoamylase activity (E.C. 3.2.1.3) in the pre-treatment of starch for extrusion, wherein the polypeptide comprises an amino acid sequence which is at least 70% identical, to the sequence shown in positions 19 to 471 (both incl.) of SEQ ID NO: 2.

39. Use of a polypeptide having glucoamylase activity (E.C. 3.2.1.3) in compost and biological waste treatment, wherein the polypeptide comprises an amino acid sequence which is at least 70% identical, to the sequence shown in positions 19 to 471 (both incl.) of SEQ ID NO: 2.

40. Use of a polypeptide having glucoamylase activity (E.C. 3.2.1.3) in the purification of plant extracts for food additives, wherein the polypeptide comprises an amino acid sequence which is at least 70% identical, to the sequence shown in positions 19 to 471 (both incl.) of SEQ ID NO: 2.

41. Use of a polypeptide having glucoamylase activity (E.C. 3.2.1.3) in cosmetics and pharmaceuticals, wherein the polypeptide comprises an amino acid sequence which is at least 70% identical, to the sequence shown in positions 19 to 471 (both incl.) of SEQ ID NO: 2.

42. Use of a polypeptide having glucoamylase activity (E.C. 3.2.1.3) in the baking industry, wherein the polypeptide comprises an amino acid sequence which is at least 70% identical, to the sequence shown in positions 19 to 471 (both incl.) of SEQ ID NO: 2.

43. Use of a polypeptide having glucoamylase activity (E.C. 3.2.1.3) in the production of pet food, wherein the polypeptide comprises an amino acid sequence which is at least 70% identical, to the sequence shown in positions 19 to 471 (both incl.) of SEQ ID NO: 2.